The impact of sustainability disclosure quality on earnings quality

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Abstract

The current study examines the influence of the quality of sustainability disclosure on earnings quality using a sample of Libyan industrial companies for the period 2016-2020. In order to investigate this relationship, both quantity and quality of sustainability disclosure is measured using a multidimensional method, whereas, earnings quality is measured by adopting two approaches which are accrual-basis and real activities approach. The main results of this study show that the quality of sustainability disclosure is positively and significantly related to earnings quality suggesting that companies with high level of sustainability disclosure quality report higher level of earnings quality.

Keywords: Sustainability Disclosure; Earnings Quality; Libyan Industrial Companies.

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تأثير الإفصاح عن الاستدامة على جودة الأرباح

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الملخص:
تناول الدراسة الحالية تأثير جودة الإفصاح عن الاستدامة على جودة الأرباح باستخدام عينة من الشركات الصناعية الليبية للفترة 2016-2020، ومن أجل التحقق من هذه العلاقة تم قياس كمية ونوعية الإفصاح عن التنمية المستدامة باستخدام نموذج متعدد الأبعاد، في حين تم قياس جودة الأرباح من خلال اعتماد منهجين هما منهج أساس الاستحقاق ومنهج الأنشطة الحقيقية. هذا وأظهرت النتائج الرئيسية لهذه الدراسة أن جودة الإفصاح عن التنمية المستدامة ترتبط بشكل إيجابي وكبير بجودة الأرباح مما يشير إلى أن الشركات التي تتمتع بمستوى عالي من جودة الإفصاح عن التنمية المستدامة تبلغ عن مستوى أعلى من جودة الأرباح.

الكلمات المفتاحية: الكشف عن الاستدامة; جودة الأرباح; الشركات الصناعية الليبية

ability.to.address.problems.in.the.short.term..In.order.to.enhance.the.outlook.of.the.company’s.financial.situation.,many.companies.have.resorted.to.manipulation.of.their.financial.statements..For.instance,..it.is.believed.that.managers.are.prepared.to.provide.misleading.results.to.show.interi

1.Introduction.
Earning.Quality.(EQ).is.an.essential.element.of.the.financial.reporting.system.,which.is.vital.for.the.operation.of.capital.markets.(Saleh.et.al.,..2020)..Several.studies.suggest.that.EQ.may.be.affected.by.the.directives.of.the.executive.departments.and.their.
sustainable development policies and companies that do not promote sustainable development. (Koh et al., 2023). Companies may show SD through charitable contributions and the use of resources and expertise to serve the community, for example by reducing waste, employing minorities, and caring for the environment. (Mazereeuw-van et al., 2014).

Based on the moral perspective, it is assumed that companies that are socially responsible and publish disclosures about the sustainability are less likely to manipulate earnings. (Yip et al., 2011). Kim et al. (2012) argue that firms that spend their resources in the activities of corporate social responsibility and conduct such programs from a moral perspective for the interest of stakeholders are expected to be less engaged in earnings manipulation and prepare more reliable and transparent earnings. To avoid potential problems. (Omar et al., 2014), which eventually undermines the credibility of financial statements. (Ghosh & Olsen, 2009). Thus, shareholders and stakeholders seek to fight against earnings manipulation practices, which are incompatible with the fairness of financial statements presented with the intention of serving all beneficiaries. (Amasiatu et al., 2023).

Nevertheless, Sun et al. (2010) argue that some managers, who use earnings manipulation, may attempt to distract stakeholders by exploiting the use of sustainability. Disclosure (SD).

The concept of sustainability has become a global tool to evaluate the performance of companies and their boards’ directors. It has become an important factor in the economic classification of companies in order to differentiate between companies with...
d. that, when agency conflicts exist, managers manipulate earnings opportunistically to their favour. Thus, SD may be used to direct the attention of shareholders and other stakeholders from discovering earnings manipulation. (Khan & Azim, 2015). Consequently, this study seeks to measure the level of EQ. SD and to investigate the relationship between them among Libyan industrial companies.

Previous empirical studies have produced contradictory results on the relationship between SD and EQ. For instance, while Laksmana and Yang (2009) and Kim et al. (2012) found a negative relationship between SD and EQ, Prior et al. (2008), Salewski et al. (2012) and Grougiou et al. (2014) reported a positive relative relationship between them. These puzzling results may be due to variations in their measurement. Owing to this, managers who engage in earnings manipulation are more likely to use SD to mask their opportunistic behavior (Sun et al., 2010). Based on this perspective, SD has become an important incentive for boards of directors and executive managers to achieve financial gain and personal rewards at the same time. Sun et al. (2010) argue...
09; Kim et al., 2012) have used more than one attributes. This limitation in measurement caused by absence of a broader framework and omission of certain important variables may make the findings of these empirical studies inappropriate in establishing the relationship between SD and EQ.

Since the majority of research is conducted in Western countries (e.g., Sun et al., 2010; Yip et al., 2011), not much is known about the relationship between SD and EQ in developing countries. Only a few empirical studies in developing countries and no of them have conducted in Libya. For example, Belgacem & Omri (2015) in Tunisia and Khan & Azim (2015) in Bangladesh. In addition, evidences found by previous literature in the developed countries, may not be helpful in understanding the relationship in developing countries.
management is broadly interpreted as a strategy used by managers to mislead some stakeholders about the underlying economic performance of the company. To influence contractual outcomes, these depend on reported accounting numbers (Christensen, 2022).

In this context, earnings manipulation is considered a type of agency cost because managers look after their own interests by providing financial reports that do not reflect an accurate economic picture of the company. On the other hand, the sustainability is commonly defined as the type and scope of social obligation, which should be considered by firms in the course of their routine business activities (Shamir, 2005). QSD, which is the focus of this research, includes financial and non-financial information relating to the company’s interaction with the developing countries due to differences in environment and standards between these countries (An, 2013). Prior research has also argued that several factors such as culture, religion, and other societal norms may influence SD and EQ (Gautam & Singh, 2010). Therefore, this study seeks to examine the relationship between the quality of sustainability disclosure (QSD) and EQ in Libya using a broader measurement framework of earnings attributes and multidimensional proxy of SD.

2. Literature Review.

The literature review indicates that earnings management, which used to measure EQ in this study, is an accounting technique used by managers to manipulate earnings through the flexibility in the accounting options or real transactions decisions (Zgarni & Fedhila, 2022). Earnings ma
Q. have established themselves as well-researched areas, comparatively. less attention has been paid to establishing a link between QSD and EQ. Since earnings manipulation is perceived in previous literature as an ethical problem, prior research has suggested SD as a determinant of EQ. (Laksmana and Yang, 2009; Grougiou et al., 2014). EQ is also affected through the incentives and choices of the manager, who is involved in formulating and making decisions in the organization. Thus, consideration of SD could be important determinants. (Choi et al., 2013). Much research has been conducted on the link between sustainability practice and EQ, (e.g., Prior et al., 2008; Chih et al., 2008; Kim et al., 2012; Choi et al., 2013; Scholtens and Kang, 2013; Gao & Zhang, 2015; Shafer, 2015). However, only a few empirical studies have been presented in their annual reports. Moreover, QSD is a primary tool to communicate with stakeholders about the social activities of the company. In this regard, Pereira et al. (2023) suggest that companies that provide high-quality sustainability disclosure reports tend to engage in less earnings smoothing and loss recognition, and then they act in a more transparent manner. Therefore, it is a key tool in building strong relationships and creating mutual understanding as well as to manage the potential conflicts. (Hess, 2008). A large number of previous empirical studies have focused on the factors impacting earnings quality. Primarily, there is more attention being given to the managerial activities which can influence the manipulation of earnings. Although SD and E
employing discretionary accruals as proxy of EQ. They use companies’ websites and annual reports to measure SD through a sample of 120 US-listed companies for the period 2005-2006. They found a positive association in the food industry and a negative relationship in the oil and gas industry between SD and earnings quality. They suggest that the relationship between SD and EQ is context-specific and is likely to be affected by the political environment of a company more than by moral considerations. Wang et al. (2016) examined the impact of mandatory SD on EQ using a subset of companies that starting in 2008, have to report their corporate social responsibility activities. They found that mandatory SD companies are less likely to engage in earnings management after 2008. This result suggested that studies have examined the association between sustainability disclosure and EQ (Sun et al., 2010; Yip et al., 2011; Belgacem & Omri, 2015; Muttakin et al., 2015; Liu & Lee, 2019; Gaio et al., 2022). Furthermore, the empirical evidence that was provided by these prior studies pointed out mixed results with respect to the relationship between SD and EQ.

For instance, Sun et al. (2010) analysed the relationship between corporate environmental disclosures and discretionary accruals as proxy of EQ using a sample of 245 non-financial companies. They found that the discretionary accruals have an insignificant impact on environmental disclosures among the UK companies for fiscal years r between the first of April 2006 and the end of March 2007. Yip et al. (2011) investigated the relationship between SD and EQ, e
n.accruals.earnings.management...Belgacem.&.Omri.(2015).investigate.whether.voluntary.SD.is.related.to.EQ..Their.study.is.conducted.on.a.sample.of.Tunisian.listed.companies.from.2002.to.2011..Content.analysis.was.used.to.determine.the.level.of.SD,.whereas,four.earning.attributes.(discretionary.accruals,.conservatism,.value-relevance.of.earnings.and.accruals.quality).were.used.to.measure.EQ..They.provide.evidence.that.SD.is.positively.related.to.the.degree.of.discretionary.accruals.and.negatively.related.to.the.degree.of.conservatism..

Based.on.above,.it.is.clear.that.prior.empirical.studies.are.few.and.have.provided.contradictory.results.on.the.relationship.between.SD.and.EQ.by.using.different.proxies.of.EQ..Moreover,.previous.studies.(e.g.,.Kansal.et.al.,.2014;,Oikonomou.et.al.,.2015)at.mandatory.SD.mitigates.information.asymmetry.through.improving.the.quality.of.financial.reporting..Similarly,.Martinez.et.al..(2015).examined.the.link.between.the.quality.of.financial.reporting.and.the.QSD..To.do.so,.they.examine.a.sample.of.747.international.non-financial.firms.from.2002.to.2010..Their.findings.show.that.conservative.companies,.with.a.low.level.of.earnings.management.practices,.report.high.QSD..

By.contrast,.Muttakin.&.Azim.(2015).investigated.the.relationship.between.SD.and.accruals.quality.as.proxy.of.EQ,.using.a.sample.of.135.companies.listed.on.the.Dhaka.Stock.Exchange.from.2005.to.2009...A.checklist.of.20.items.was.constructed.in.order.to.measure.SD.in.annual.reports..Their.findings.indicate.that.managers.in.emerging.markets.provide.more.SD.when.theyengage.i
ng.. Libyan industrial companies. To achieve the aim of this paper, the hypotheses are built as follows.

SD is an issue of growing interest for academics, businesses, and stakeholders. In practice, those companies who implement and report corporate social responsibility activities are bound to provide reliable and transparent financial information (Kim et al., 2012) and demonstrate a commitment to ethical and accountable behaviour to stakeholders. Nevertheless, there is an argument that SD can be used as an entrenchment mechanism to achieve managers’ self-interest objectives by distorting earnings information (McWilliams et al., 2006; Choi et al., 2013).

Since EQ is influenced by the choices and incentive of those who are involved in formulating and making decisions in the organization, have also used different quantitative measurements as proxy of QSD. Most notably, it is clear also from the above, previous studies that no study has examined the link between SD and real activities. Earnings management. Finally, the majority of the prior studies have applied in Western countries, just a few studies have conducted in developing countries. And no of them have conducted in Libyan context.

Thus, this study will enhance the understanding of this relationship by using AEM and REM to measure earnings management practices as proxy of EQ and multidimensional proxy of sustainability disclosure. A measure to measure both the quality and quantity of SD in the Libyan context.

**Hypothesis Development...**

The main purpose of this study is to understand the relationship between EQ and QSD. amo
tunistic behaviour.. Those managers voluntarily issue SD to promote an impression of their corporate social responsibility, values, which may or may not be substantiated. (Mahoney et al., 2013). Following this argument, the relationship between EQ and SD indicates that SD is used by companies with poor financial reporting. quality as a mechanism to gain legitimacy for substitution of their low quality financial reporting. (Martinez-Ferrero et al., 2015). SD, in this sense, is used as a window-dressing to distract the attention of the firms’ stakeholders from their questionable and poor financial reporting practice. Neverthe less, according to the moral perspective, it is assumed that companies, which are socially responsible and disclose quality information of their corporate social responsibility, are less likely to manipulate earnings opportunistically in their favour.

Managers, who use earnings management, may attempt to distract stakeholders about their opportunistic considerations, of SD could be important determinants. (Choi et al., 2013; Wang et al., 2015). In order to explain the link between QSD and EQ, previous studies have suggested two perspectives, namely, the opportunistic perspective and the moral perspective. (Kim et al., 2012). The opportunistic perspective suggests that managers who engage in earnings management are more likely to use SD to mask their opportunistic behaviour. (Khan and Azim, 2015). According to this perspective, SD has become an important incentive for managers to achieve financial gain and personal rewards at the same time. Sun et al. (2010) argued that when agency conflicts exist, managers might manipulate earnings opportunistically in their favour.
wing to this, many empirical studies have shown evidence of a positive relationship between corporate social responsibility practice and EQ. (Laksmana & Yang, 2009; Kim et al., 2012). The above two theoretical perspectives pose an important research question. A closer look at the arguments behind these two perspectives, however, reveals that they can be reconciled if one can evaluate the informational content (i.e., quality) of corporate social responsibility. The prior research in this area has substantiated that SD is associated with EQ. Empirical findings, however, remain inconclusive with regard to whether commitment to SD has a positive or negative impact on EQ and vice versa. (e.g., Sun et al., 2010; Yip et al., 2011; Muttakin & Azim, 2015; Wang et al., 2015; Belgacem & Omri, 2015). One possible manipulation of earnings. (Yip et al., 2011; Kim et al., 2012) argue that firms that spend their resources in the activities of sustainability and conduct programs in moral perspective for the interest of stakeholders are expected to engage in less earnings management and prepare more reliable and transparent financial reporting. Choi et al. (2013) pointed out that since EQ is consistent with sustainability principles, companies with a higher commitment to corporate social responsibility are seemingly acting in a responsible way when they prepare the financial statements. Given that managers are more likely to engage in earnings manipulation when there is high information asymmetry, sustainability reporting is assumed by signalling theory to be a means of mitigating the informational asymmetry between management personnel and stakeholders. O
lders will be reduced. Since the reduction in information asymmetry tends to constrain earnings management (Wang et al., 2015), the current study expects a positive relationship between QSD and EQ and thus supports the hypothesis:

H1: there is a negative relationship hip between accruals earnings management and QSD.

H2: there is a negative relationship hip between real earnings management and QSD.

Research Method
Sample of the Study

Our initial sample for this study is Libyan industrial companies from 2016 to 2020. Firms with missing data have been removed from the initial sample. The final sample consists of 55 firms-year observations during the study period.

reason for this could be due to the ebiased measurement of SD. Given the conflicting results of prior studies on this relationship and its usefulness for market participants and academics, there is a need to explain the relationship (Kim et al., 2012). It is not possible to conclude the possible effect of SD on EQ without knowing whether sustainability disclosure conveys a true (as in the stakeholder and ethical perspective) or a false information (as in the managerial opportunism or legitimacy perspective). Chih et al., (2008) argue that it is unlikely that managers will engage in earnings management in companies that provide high quality disclosure of their social activities that targets all stakeholders because when the transparency of information is increased, the expectation of the information asymmetry among management and stakeho
Where:
TA_{it} = \text{total accruals}
A_{it} = \text{the book value of total asset of company i at the end of year t}
\Delta \text{REV}_{it} = \text{revenues of company i in year t} - \text{deducted revenues in year t-1}
\Delta \text{REC}_{it} = \text{change in accounts receivables}
PPE_{it} = \text{gross property, plant and equipment of company i at the end of year t}
\alpha, \beta_1, \beta_2 = \text{estimated parameters}
e_{it} = \text{the residual}

We then employed the coefficient estimates from equation (1) to calculate normal accruals (NA_{it}) for every firm-year observations in the sample:

\begin{align*}
\text{NA}_{it} &= \alpha (1./\text{TA}_{it}) + \beta_1(\Delta \text{REV}_{it}) + \beta_2(\Delta \text{REC}_{it})/\text{A}_{it} + e_{it} \\
\text{Measuring}\text{.EQ.}(\text{dependent variable})\text{.}
\end{align*}

To measure EQ. this study uses AEM and REM as proxy for the dependent variable of this study as following:

\text{Measuring}\text{.AEM.}

Following prior studies, the existence of AEM was tested by examining discretionary accruals through differentiating them from non-discretionary accruals. We employed Modified Jones model (Dechow et al., 1995) to estimate current discretionary accruals. The following cross-sectional regression equation is used to estimate current accruals

\text{..The cross-sectional Modified Jones Model. (1995):}

\begin{align*}
\text{TA}_{it}/\text{A}_{it-1} &= \alpha (1./\text{A}_{it-1}) + \beta_1(\Delta \text{REV}_{it-1}) + \beta_2(\text{PPE}_{it}/\text{A}_{it-1}) + e_{it} \\
\end{align*}
entional regression for every industry:

\[ \text{CFO}_{it}/.A_{it-1} = \alpha + \alpha(1./.A_{it-1}) + \beta_1(\text{Sales}_{it}/.A_{it-1}) + \beta_2(\Delta\text{Sales}_{it}/.A_{it-1}) + \epsilon_{it}(3) \]

Where:

\[ \text{CFO}_{it} = \text{cash flow from operations} \]
\[ . \text{for the company } i \text{ in the current year, } \]
\[ . A_{it} = \text{the total assets in the previous year,} \]
\[ . \Delta \text{Sales}_{it} = \text{changes in the company’s sales in the current year.} \]
\[ . \epsilon_{it} = \text{the residual}. \]

We then employed the coefficient estimates from equation (3) to calculate normal CFO. For every firm-year, abnormal cash flow from operations (ACFO) is the actual CFO minus the “normal” CFO calculated using estimated coefficients from the corresponding industry.

AEM measured by the difference between TA and the fitted d.NA.

The lower level of AEM indicates a less level of earnings manipulations in accruals-based (higher level of EQ).

**Measuring REM**

Following Roychowdhury (2006), we consider three metrics to develop our proxies for REM:

- The abnormal levels of cash flow from operations (ACFO), abnormal production costs (APROD), and discretionary expenses (ADIS). Previous literature (Cohen and Zarowin, 2010) offer evidence of the validity of these three proxies suggested by Roychowdhury (2006).

Following Roychowdhury (2006), we express normal cash flow from operations as a function of sales and change in sales in the current period. To estimate the model, we run the following cross...
The third proxy is abnormal discretionary expenses (ADISX), which is estimated by using the following equation:

\[ \text{DISX}_{it}/A_{it-1} = \alpha + \alpha (1/A_{it}) \]

\[ + \beta_1 (\text{Sales}_{it}/A_{it-1}) + \varepsilon_{it} \] (7)

Where DISX\(_{it}\) = expenses such as administration, R&D, and sale s. expenses. All other variables are defined above.

We then employed the coefficient estimates from equation (7) to calculate normal DISX.. For every firm year, abnormal production cost from operations (A DISX) is the actual DISX minus the “normal” DISX calculated using estimated coefficients from equation (7).

Following Roychowdhury (2006), we add - ACFO to ADISX and APROD. using the following equation:

\[ \text{uistry-year.model.and.the.firm-year’s.sales.and.lagged.assets.} \]

We defined Production costs as the sum of Cost of Goods Sold + nd the change of inventory for firm i in year t.\..

\[ \text{COGS}_{it}/A_{it-1} = \alpha + \alpha (1/A_{it}) \]

\[ + \beta_1 (\text{Sales}_{it}/A_{it-1}) + \varepsilon_{it} \] (4)

\[ \text{ΔINV}_{it}/A_{it-1} = \alpha + \alpha (1/A_{it}) \]

\[ + \beta_1 (\Delta \text{Sales}_{it}/A_{it}) \]

\[ + \beta_2 (\Delta \text{Sales}_{it-1}/A_{it}) \]

\[ + \varepsilon_{it} \] (5)

Using above equations (4) and (5), we estimate the abnormal level of production costs (APROD) as:

\[ \text{PROD}_{it}/A_{it-1} = \alpha + \alpha (1/A_{it}) \]

\[ + \beta_1 (\text{Sales}_{it}/A_{it}) \]

\[ + \beta_2 (\Delta \text{Sales}_{it}/A_{it}) \]

\[ + \beta_3 (\Delta \text{Sales}_{it-1}/A_{it-1}) + \varepsilon_{it} \] (6)

We then employed the coefficient estimates from equation (6) to calculate normal PROD. For every firm year, abnormal production cost from operations (APROD) is the actual PROD minus the
e framework of BFM to measure forward looking information disclosure and compared with magnitude measurement of forward looking information. They confirm that by using multidimensional measurement of disclosure, the new framework improves the disclosure measurement and offers more thorough understanding of disclosure quality. Therefore, the study estimated the quality of SD by using the framework of BMF which is improved by Beretta & Bozzolan in 2008. The current study measure both quantity and quality dimensions of SD by the same framework that has been used by Beretta & Bozzolan in 2008. This framework consist of two phases to measure the quality of disclosure. The second phases is divided to two steps. The first phase and the first step in the second phase which have been applied by Beretta & Bozzolan.

REM = .ACFO + .ADIX + .APR OD.(8)

The lower level of REM indicates a less level of earnings manipulations in real activities (higher level of EQ).

The Quality of CSRD

Prior literature has indicated that there is controversy on the measurement of SD (HASSAN, 2010). Botosan (2004) argued that although quantity and quality are inseparable and difficult to measure, information quantity disclosed does not necessarily imply quality. Beattie, McInnes and Fearnley (2004) (BMF) create a new framework to measure both magnitude and width of voluntary disclosure. BMF suggested that this framework can be improved by adding the depth in addition to the width in order to measure the richness of voluntary disclosure. Beretta & Bozzolan (2008) used this improvement in the
words,.text,.sentences,.paragraphs.or.pages.of.SD.(Each.technique.
has.its.own.pros.and.drawbacks).Coding.by.sentences,.paragraphs.and.words.has.been.criticised.by.prior.studies..Due.to.different.information.may.be.Include.
d.into.the.same.paragraphs.or.sentences.related.to.the.SD.also.individual.words.are.meaningless..As.a.result,.a.text.unit.was.employed.to.measure.SD.in.this.study,.which.was.identified.by.Beattie.and.Thomson.(2007).as.“part.
of.sentencecaptures.a.piece.of.information”..BMF.suggested.that.“the.standardised.residuals.of.an.ordinary.least.squares.(OLS)regression.can.be.used.as.a.good.proxy.ofDisclosure.quantity.using.industry.and.size.as.independent.variables”.In.this.context,.several.studies.have.supported.the.impact.of.industry.and.size.onDisclosure.quantity.(Urquiza.et.al.,.2009; Beretta.n.2008.can.be.used.to.measure.all.kinds.ofDisclosure.(Beretta.& Bozzolan,.2008)..However.the.second.step.of.the.second.phase.was.designed.to.measure.the.forward-looking.information..Thus,.this.study.followed.the.same.of.
be.suitable.for.measuring.the.usefulness.of.SD.as.following..

The.first.phase,.The.current.study,.use.content.analysis.to.
measure.the.frequency.of.items.that.is.disclosed.in.the.annual.reports,.we.use.a.checklist.consists.
of.25.items.classified.into.6.key.categories,.which.are.community.development,.human.resources,.products.and.services,.customers,.environment.and.others.(see.
Appendix.1)..The.techniques.us ed,.in.previous.studies,.in.content.
analysis.unit.ofDisclosure.are.
RQ. = D_{it} - d_{it}

Where RQ is the relative quantity index, D_{it} is the disclosure for company i in year t and d_{it} is the estimated disclosure by the residual for the same company in the same year. The RQ index is standardized (STRQ) using the minimum and the maximum of the relative quantity index of the sample.

The second phase, Beretta & Bozzolan, 2008 determine the Richness (RIC) as a function of the Width (WID) and Depth (DEPTH) of disclosures. This study applied the same method of Beretta & Bozzolan, 2008 to measure WID of SD using the concentration of SD and the coverage of disclosure as proxy for WID, whereas, the current study utilizes the characteristics of Information suggested by Global Reporting Initiative (GRI) guidelines. ASB (2010) as proxy for DEP.

Thus, the dimension of quantity measured by the method of Beretta & Bozzolan in 2008 as following:

\[ D_{it} = \beta_0 + \beta_1 \text{SIZE}_{it} + \beta_2 \text{Typ}_{it} + \varepsilon_{it} \] (1)

Where, \( \varepsilon_{it} \) is the residual for the same company in the same year. We then employed the coefficient estimates from equation (1) to calculate estimated disclosure \( (d_{it}) \) for every firm-year observations in the sample:

\[ d_{it} = \beta_0 + \beta_1 \text{SIZE}_{it} + \beta_2 \text{Typ}_{it} + \varepsilon_{it} \] (2)
1. To be used as second proxy for quality of disclosure.

Coverage (COV) indicate s that SD quality is better when the distribution of information reported between the items taken into consideration is high instead of only a few of disclosure units. about some of them.

\[
\text{COV} = \frac{1}{\text{st}} \sum_{j=1}^{\text{INF}}\]

Where \( \text{INF} = \text{1 if company } i \text{ discloses information about the item } j \text{ in the annual report, otherwise } = 0 \), and \( st = \) number of subcategory. The value of WID is obtained as the mean of COV and WID = \( \frac{1}{2} \) (CON + COV)

2. In order to be able to evaluate the usefulness of SD, the GRI guidelines suggested eleven principles which should be taken into an account: transparency, sustainability context, completeness, comparability, relevance, accuracy explained in the second step in this phase.

1. To measure the WID, this study determine the concentration of SD across items as a function of CON at subcategory Year Level (Sub.CON) and determine the spread of disclosure using the Coverage (COV).

\[
\text{CON} = \sum_{j=1}^{n} P_j^2
\]

Where \( P_i = \) proportion of disclosure of item \( i \) measured by the content analysis as frequency of item. The maximum value of CON is 1 when all SD text units fall in one category and the value is smaller when SD text units are spread between categories. The higher value of CON index is the poorest quality of disclosure. Thus, the results are multiplied by -
tion to be useful for making decisions. (IASB, 2010, A33). The understandability and comparability, which enhance qualitative attributes, are complementary to the fundamental attributes and distinguish between more useful information than the less useful information. Due to above, this study flowing previous studies (Alotaibi & Hussainey, 2016). define the Depth as:

Usefulness = \frac{1}{4} \cdot ( Relevant + Faithfully + Understandability + Comparability )

Where,

Relevance = 0. if no. SD., 1. if SD. descriptive information is disclosed, 2. if descriptive and financial information of SD is included, 3. if descriptive disclosure including financial and forward-looking information is reported.

racy, auditability, neutrality, clarity, inclusiveness, and timeliness. (Clarkson et al., 2008). Similarly, both the International Accounting Standards Board (IASB) in 2010 and the Financial Accounting Standards Board (FASB) in 2008a; 2008b; 2010 explicitly indicate the desirability of creating a comprehensive measurement tool that take in account all characteristics of information. IASB 2010 provides a conceptual framework for selecting the characteristics of information that should be comprised in such an index of quality. That is, the conceptual framework indicate that the level of disclosure is beneficial by relying on its qualitative characteristics. In order to contribute the decision usefulness, fundamental and enhancing qualitative attributes should be taken in an account. The disclosure must be relevant and faithfully represent information.
Comparability. = 0. if no.ratios.is.found.in.annual.report,.1.if.few.ratios.are.found.(less.than.5)..2.if.some.ratios.are.found..(from.5.to.10)..3.if.enough.ratios.are.found.(more.than.10.).(Hussainey,.&.Alotaibi,.2016).The.average.of.WID.and.DEP.is.used.to.measure.RIC.as.following:
RIC. = -\frac{1}{2} (WID + usefulness)
2- Finally,.the.overall.index.of.quality.is.the.average.of.RIC and.RQ.as.following:
The.Quality.Index.of.disclosure.(QSD). = -\frac{1}{2} (RIC + RQ)
To.capture.the.relationship.between.the.quality.of.SD.and.EQ,.we.employ.the.following.models:
EQ.(REM,.AEM,.CFO,.PROD.and.DISX). = a + \beta 1.QSD + \beta 2.REM/AEM + \beta 3.Size + \beta 4.Growth + \beta 5.Leverage + \beta 6.Industry + \beta 7.ROA + \beta 8.BEFS...
(e.g..Jonas.and.Blanchet,.2000;.McDaniel.et.al.,.2002).

Faithfully.representation = 0. if.no.disclosure.on.sustainability.practice,.1. if.the.positive.events.only.mentioned.(less.than.10.sentences),.2. if.emphasize.on.more.positive.events.(more.than.10.sentences),.3. if..more.positive.events.and.negative.events.are.disclosed.(Razaee,.2003;.Chakroun.et.al.,.2013,.Hussainey,.&.Alotaibi,.2016)...

Understandability. = 0. if.no.disclosure.on..sustainability.practice,.1..if..poor.presentation.(nonfinancial.information.only,.without.any.table,.pictures.or.grap hes).,.2. if.financial.and.nonfinancial.information.without.any.table.are.provided,.pictures.or.graphs,.3. if.a.good.presentation.(text,.financial.information.and.graphs,.tables.or.pictures).(Jonas.and.Blanchet,.2000).
The trade-off between REM and accruals-based is a function of their relative costs (Zang, 2012). Therefore, following Kim (2012), we include REM as a control variable in the first equation and AEM as control variable in second, third, fourth and fifth equations.

**2. Independent variables:**

QSD = The Quality Index of Disclosure

SIZEIt = Size of companies, the natural logarithm of firms’ assets.

Total assets is used to measure the size of company.

GROWTH = Growth ratio measured through the change of sales.

LEV... = Financial leverage measured by total liabilities to total assets ratio.

ROA... = the profitability of company, the income from operation to total asset.

BEF = board effectiveness. We award 1 if the company complies.

Where,

**1. Dependent variable:**

AEM... = absolute value or discretionary accruals for company i and period t, discretionary accruals are used as dependent variable in the first equation.

REM... = combined proxy, which is calculated by aggregating of CFO, PROD, and DISX of company i and period t, REM is used as dependent variable in the second equation.

CFO = abnormal cash flows from operations, which is used as dependent variable in the third equation.

PROD = abnormal production costs, which is used as dependent variable in the fourth equation.

DISX = abnormal discretionary expenses, which is used as dependent variable in the fifth equation.

Managers are likely to use a mix of AEM and REM as tools.
ows the mean for the three individual proxies of real earning
s management (ACFO, APROD, and ADISX) are 0.0031, 0.0022, and 0.0015 respectively. These results are similar with the findings of Ferentinou (2014), who found that the mean values of ACFO, APROD, and ADISX are 0.005, 0.002, and 0.003 respectively. With respect to the independent variables, 25% of the sample have less than 0.160 with the mean value of QSD at 0.300. This figure is relatively higher than the results reported by Hussainey and Alotaibi (2016), who found that the average value of quality of SD is 0.334 in Saudian companies.

with Libyan code for corporate governance, otherwise zero.

3. DESCRIPTIVE STATISTICS

Table 1 describes the total observations, mean, standard deviation, 25 percentiles (Q1) and 75 percentiles (Q3) values and median for all variables used in this study. The descriptive statistics indicate that the mean value of current AEM is 0.041. This result is consistent with the average reported by Rao & Dandale (2008), who found that the mean value of AEM is around 0.05. Regarding real earning management, table 2 shows that the mean value of real activity earning management is 0.002. Table 2 also sh
Table 1: Descriptive Statistics

<table>
<thead>
<tr>
<th>variable</th>
<th>Mean</th>
<th>Sd</th>
<th>p25</th>
<th>p50</th>
<th>p75</th>
</tr>
</thead>
<tbody>
<tr>
<td>AEM</td>
<td>0.041</td>
<td>0.106</td>
<td>0.007</td>
<td>0.021</td>
<td>0.049</td>
</tr>
<tr>
<td>REM</td>
<td>-0.002</td>
<td>0.128</td>
<td>-0.037</td>
<td>0.002</td>
<td>0.048</td>
</tr>
<tr>
<td>CFO</td>
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<td>-0.037</td>
<td>-0.002</td>
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<tr>
<td>PROD</td>
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<td>0.102</td>
<td>-0.032</td>
<td>-0.001</td>
<td>0.025</td>
</tr>
<tr>
<td>DISX</td>
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<td>-0.043</td>
<td>-0.003</td>
<td>0.034</td>
</tr>
<tr>
<td>QSD</td>
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<td>0.136</td>
<td>0.160</td>
<td>0.508</td>
<td>0.62</td>
</tr>
<tr>
<td>ROA</td>
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<td>0.124</td>
<td>0.041</td>
<td>0.090</td>
<td>0.15</td>
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<tr>
<td>SIZE</td>
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<td>0.663</td>
<td>7.00</td>
<td>7.39</td>
<td>7.8</td>
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<td>GROWTH</td>
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<td>LEV</td>
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<td>0.392</td>
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<td>BEF</td>
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<td>0.000</td>
<td>1.0</td>
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<td>ACEF</td>
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<td>0.485</td>
<td>0.000</td>
<td>0.000</td>
<td>1.0</td>
</tr>
</tbody>
</table>

*Significance at the 0.10 level,
**Significance at the 0.05 level,
***Significance at the 0.01 level

The current study uses the correlation matrix to examine whether there is high correlation between the independent variable and there is no multicollinearity problem between the independent variables. It shows that the highest correlation coefficient is between AEM and BEF, while the correlation coefficients of all other study variables are less than conventional thresholds.
### Table 2: Correlation Matrix

<table>
<thead>
<tr>
<th></th>
<th>CSRD</th>
<th>AEM</th>
<th>Type</th>
<th>ROA</th>
<th>Size</th>
<th>Growth</th>
<th>Lev</th>
<th>BEF</th>
<th>ACEF</th>
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</thead>
<tbody>
<tr>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>AEM</td>
<td>-0.093**</td>
<td>1.000</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Type</td>
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<td>0.0184</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ROA</td>
<td>0.0184</td>
<td>-0.0497*</td>
<td>0.045**</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>SIZE</td>
<td>0.103**</td>
<td>-0.0481*</td>
<td>-0.074**</td>
<td>0.113**</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GROWTH</td>
<td>0.058**</td>
<td>-0.052**</td>
<td>-0.034</td>
<td>0.0137</td>
<td>0.0091</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lev</td>
<td>0.006</td>
<td>-0.0114</td>
<td>0.007</td>
<td>0.072**</td>
<td>0.059*</td>
<td>-0.0127</td>
<td>1.000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BEF</td>
<td>0.023</td>
<td>0.221**</td>
<td>-0.044**</td>
<td>0.044**</td>
<td>-0.079**</td>
<td>-0.034**</td>
<td>-0.0099</td>
<td>1.000</td>
<td></td>
</tr>
<tr>
<td>ACEF</td>
<td>-0.019</td>
<td>-0.066**</td>
<td>0.002</td>
<td>-0.0105</td>
<td>0.0183</td>
<td>-0.0109</td>
<td>-0.016</td>
<td>0.089**</td>
<td>1.000</td>
</tr>
</tbody>
</table>

### Table 3: Correlation Matrix

<table>
<thead>
<tr>
<th></th>
<th>CSRD</th>
<th>REM</th>
<th>Type</th>
<th>ROA</th>
<th>Size</th>
<th>Growth</th>
<th>Lev</th>
<th>BEF</th>
<th>ACEF</th>
</tr>
</thead>
<tbody>
<tr>
<td>CSRD</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>REM</td>
<td>-0.015**</td>
<td>1.000</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Type</td>
<td>0.0816*</td>
<td>0.009</td>
<td>1.000</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ROA</td>
<td>0.0172</td>
<td>0.091**</td>
<td>0.045*</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SIZE</td>
<td>0.112**</td>
<td>0.0084</td>
<td>0.074**</td>
<td>0.113**</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GROWTH</td>
<td>0.056**</td>
<td>-0.0152</td>
<td>-0.035</td>
<td>0.0127</td>
<td>0.0091</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
In order to choose the most appropriate model (panel or pooled data model), a Chow test is conducted for the regression models to examine the relationship between the QSD and QE. Tuwasi et al. (2015) indicate that if the F value of the Chow test is less than 0.05, the preferred model is the panel data model. Since the results of the Chow test for this study showed that the F value of the Chow test was less than 0.01 for the models used in the study, the panel data model is more appropriate. (see Appendix 2). The panel data model can be classified by random effect or fixed effect...Clark and Linzer. (201

<table>
<thead>
<tr>
<th>Lev</th>
<th>.006</th>
<th>-.006</th>
<th>.006</th>
<th>.071**</th>
<th>0.059*</th>
<th>-.0117</th>
<th>1.000</th>
</tr>
</thead>
<tbody>
<tr>
<td>BEF</td>
<td>.032</td>
<td>.022</td>
<td>-.042*</td>
<td>.045**</td>
<td>-</td>
<td>.078**</td>
<td>-.032**</td>
</tr>
<tr>
<td>ACEF</td>
<td>-.027</td>
<td>.053**</td>
<td>.001</td>
<td>-.0106</td>
<td>.0183</td>
<td>-.0108</td>
<td>-.006</td>
</tr>
</tbody>
</table>

5). suggest that if the p-value is less than 0.05, the fixed effect method is most appropriate for examining the relationship. In order to determine the most appropriate effect to use in this study, the Hausman test was conducted for the regression models used in the study. Since the p-value for the regression models used in this study is at the 0.001 level (see Appendix 3), the fixed effect method is more appropriate in examining the relationship between the QSD and QE in this study. (Kim et al., 2012). Furthermore, Gujarati (2003) suggests that normality problems should be investigated in order to ensure an appropriate regression model.

4. Multivariate Analysis
The normality of the study data was verified using a histogram test (see Appendix 3). The results of regression model is shown in Table 4.

Table 4. Column 1 indicates that the QSD is negatively and significantly associated to AEM. (coef. = .388, p < .001). Thus, the first sub-hypothesis of the current study is accepted. These findings are consistent with previous findings reported by Wang et al. (2015), suggesting that firms with higher QSD report less discretionary accruals compared to those companies with a lower QSD. The results are consistent with the ethical perspective which suggests that companies that are socially responsible are more likely to prepare reliable and transparent financial reporting (Choi et al., 2013). These findings are also in line with signaling theory, given that...
results found by Kim et al. (2012), indicating that companies with less level of QSD are more likely to use real transactions to manipulate earnings. Additionally, Table 4 column 1 and 2 indicate that the combined proxy for real activities earnings management is negatively and significantly associated with absolute value of discretionary accruals. This indicates that companies that use less accrual-based earnings management are more likely to engage in real activities earnings management and vice versa. This finding is in line with previous studies (Ho, L. et al., 2015). With respect to the company characteristics as control variables, Table 4 shows that there is a negative and significant effect of profitability on both AEM and REM (Coef. = -0.078, p < 0.01; Coef. = -0.090, p < 0.01 respectively). Company size also is significantly and negatively related to AEM, DISX, CFO, and PROD at level .05. This is consistent with previous studies (Kim et al., 2012). In the context of corporate governance mechanisms as control variables, Table 4 shows that board effectiveness is negatively and significantly related with AEM (Coef. = -0.011, p < 0.05). Which suggest that companies with less effective board have more flexibility to engage in AEM.
Table 7: Results of panel regression: the relationship between QSD and EQ

<table>
<thead>
<tr>
<th></th>
<th>......AEM (1)</th>
<th>REM (2)</th>
<th>DISX (3)</th>
<th>CFO (4)</th>
<th>PROD (5)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coef</td>
<td>-0.388*** -12.47</td>
<td>-0.157** -3.02</td>
<td>-1.01 -1.49</td>
<td>-0.99** -1.93</td>
<td>-1.01 -1.88</td>
</tr>
<tr>
<td>t</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>REM/AE</td>
<td>-0.212** -12.76</td>
<td>-0.391*** -12.76</td>
<td>-0.406*** -13.23</td>
<td>-0.380*** -13.19</td>
<td>-0.394*** -14.68</td>
</tr>
<tr>
<td>ROA</td>
<td>-0.087*** -4.47</td>
<td>-0.096*** -4.43</td>
<td>0.013 0.18</td>
<td>0.011 0.14</td>
<td>-0.013 -0.65</td>
</tr>
<tr>
<td>size</td>
<td>-0.015** -2.36</td>
<td>-0.011 -0.26</td>
<td>-0.031** -2.69</td>
<td>-0.028** -2.03</td>
<td>-0.018** -2.79</td>
</tr>
<tr>
<td>Growth</td>
<td>0.005 0.86</td>
<td>-0.011*** -0.37</td>
<td>-0.013 -0.53</td>
<td>0.013 0.62</td>
<td>0.001 0.00</td>
</tr>
<tr>
<td>type</td>
<td>0.014 0.77</td>
<td>0.012 0.89</td>
<td>-0.017 -0.23</td>
<td>-0.019 -0.46**</td>
<td>-0.006 -0.33</td>
</tr>
<tr>
<td>Leverage</td>
<td>-0.021* -1.81</td>
<td>........0.014 0.31</td>
<td>0.014 0.37</td>
<td>0.012 0.21</td>
<td>0.003 0.19</td>
</tr>
<tr>
<td>BEF</td>
<td>....-0.011** -1.36</td>
<td>....0.023* 1.73</td>
<td>-0.013 -0.57</td>
<td>-0.014 -0.53*</td>
<td>-0.007 -1.03</td>
</tr>
</tbody>
</table>

*Significance at the 0.10 level,
**Significance at the 0.05 level,
***Significance at the 0.01 level.

The study examines the effect of QSD on EQ using a sample of Libyan industrial companies. Although earnings quality is considered an important communication tool among management and stakeholders, many companies attempt to manipulate their financial statements, which would undermine the credibility of financial information. Since previous literature perceives earnings management as a moral problem.

Conclusion

This study employs multidimensional proxy to measure both quality.

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Whereas, this study employs a multidimensional proxy to measure the quality of SD. The results of this study indicate that the quality of SD is positively and significantly associated with EQ. Consistent with the signalling theory, agency theory, and ethical perspective, these results support the assumption that companies which show QSD are more likely to provide high EQ, and less likely to use aggressive EM through a combination of real and accruals-based EM. This study provides insights for academics and policy makers. To the academic sector, the study results on the impact of QSD on real earnings manipulation may present stepping stones for future studies so that future research can consider the role of voluntary disclosure in reducing REM to protect investors. Similarly, this research has policy implications for regulators and standard setters to continue improving.

The quantity of SD, whereas EQ is measured by both real activities and accruals-based measurement. By employing these measurements, this study contributes to the existing literature by providing new evidence on the association between EQ and SD in the Libyan context as a developing country. This study examines whether companies that disclose higher levels of SD quality behave in different ways when making their accounting and operating decisions. Real and accruals-based earnings management are used as a proxy for EQ. Modify Jones model is used as the main measure of accruals-based earnings management.

Following Kim et al. (2012), this study uses REM, which is the combination of three individual proxies, as the main proxy of real activities, earnings management, as well as the three individual proxies (ACFO, APROD, and ADIS).


References


ty and CSR. Springer Science & Business Media B.V. 123.


Appendix: 1 Sustainability disclosure checklist items

**Community development**
1. Education,
2. Contribution to national economy
3. Charity and donation,
4. Social activities support
5. Other Community investment

**Human resources**
1. Safety and health,
2. Employee equal opportunities
3. Employee training and development
4. Retirement benefits.
5. Other employee Data

**Products and services**
1. Products/Services quality
2. Products safety.
3. Product or service development,
4. ISO or other awards received by company.
5. Other products data

**Customer**
1. Customer service information.
2. Customer feedback
3. Others customer data

**Environment**
1. Pollution
2. Recycling
3. Waste management
4. Water usage
5. Emission of carbon and harmful gases
6. Energy policy statement
7. ISO or other awards received by company
8. Other environmental policy statement

**Others sustainability Information**
1. General sustainability Information

Appendix 2: The results of Chow Test

The relationship between AEM and QSD

| sigma u | .74368149 |
| sigma e | .06586534 |
| rho     | .992191554 | (fraction of variance due to u_i) |

F test that all u_i=0: F(211, 1683) = 11.35 Prob > F = 0.0000

The relationship between REM and QSD
Appendix 3: The results of Hausman test

The relationship between AEM and QSD

Hausman fixed random, signamore

<table>
<thead>
<tr>
<th></th>
<th>Coefficients</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(b) fixed</td>
<td>(B)</td>
<td>(b-B)</td>
<td>sqrt(diag(V b-V B))</td>
</tr>
<tr>
<td></td>
<td>random</td>
<td></td>
<td></td>
<td>S.E.</td>
</tr>
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<td>.0183782</td>
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<td>.0153842</td>
</tr>
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<td>.00113</td>
<td>.0050209</td>
<td>.007993</td>
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<tr>
<td>BEF</td>
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<td>.0010664</td>
<td>.0070273</td>
<td>.0030711</td>
</tr>
</tbody>
</table>

b = consistent under Ho and Ha; obtained from xtreg B = inconsistent under Ha, efficient under Ho; obtained from xtreg

Test: Ho: difference in coefficients not systematic

\[ \chi^2(12) = (b-B)^\prime [(V_b-V_B)^{-1}] (b-B) = 135.59 \]

Prob>\chi^2 = 0.0000
The relationship between REM and QSD

Hausman fixed random, sigmamore

<table>
<thead>
<tr>
<th>Coefficients</th>
<th>(b) fixed</th>
<th>(B) random</th>
<th>(b-B) Difference</th>
<th>sqrt(diag(V_b-V_B)) S.E.</th>
</tr>
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<td>-.0696031</td>
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</tr>
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</table>

b = consistent under Ho and Ha; obtained from xreg B = inconsistent under Ha, efficient under Ho; obtained from xreg

Test: Ho: difference in coefficients not systematic

\[ \chi^2(12) = (b-B)'(V_b-V_B)^{-1}(b-B) \]

= 361.22

Prob>chi2 = 0.0000

Appendix 4: The results of normality test

The relationship between AEM and QSD
The relationship between REM and QSD